Collaborative Software Development Using Git & GitHub

Implementation of Collaborative Git Workflow

Student Details:

- **Name:** Shariqua Patel Farooque
- **Register Number:** DVP06018
- **Course:** DevOps Bootcamp - Batch 6, Week 3
- **Institution:** Error Makes Clever
- **Git URL :** https://github.com/Vickyzees/first-collaborative-project1.git

1. Abstract

This project demonstrates the practical implementation of an industry-standard collaborative development workflow using Git and GitHub. The objective was to contribute a new webpage (`about.html`) to a shared repository while handling permission restrictions, fork-based contribution, and deployment verification. During implementation, direct push access to the main repository was denied due to access control policies.


```
PS C:\Users\user\Documents\first teamwork by EMC\Vignesh.s-Devops-firs
t-collaborative-project> git remote -v
myfork  https://github.com/shariquafarooque-sha/EMC-team-repo.git (fet
ch)
myfork  https://github.com/shariquafarooque-sha/EMC-team-repo.git (pus
h)
origin  https://github.com/Vickyzees/Vignesh.s-Devops-first-collaborat
ive-project.git (fetch)
origin  https://github.com/Vickyzees/Vignesh.s-Devops-first-collaborat
ive-project.git (push)
PS C:\Users\user\Documents\first teamwork by EMC\Vignesh.s-Devops-firs
t-collaborative-project> git push origin updated-about
remote: Permission to Vickyzees/Vignesh.s-Devops-first-collaborative-p
roject.git denied to shariquafarooque-sha.
fatal: unable to access 'https://github.com/Vickyzees/Vignesh.s-Devops
-first-collaborative-project.git/': The requested URL returned error:
```

To resolve this, the **Fork & Pull Request** workflow was adopted, which is widely used in enterprise software development. Additionally, a deployment link mismatch issue was identified and corrected after verification. The project successfully simulates real-world DevOps collaboration practices and structured troubleshooting.

2. Objectives

- Implement Fork & Pull Request workflow.
- Handle repository permission restrictions.
- Contribute `about.html` page to a shared project.
- Verify GitHub Pages deployment.
- Apply industrial-level debugging approaches.
- **Target:** Demonstrate enterprise-grade collaborative Git workflow and problem-solving ability.

```
PS C:\Users\user> git clone https://github.com/Vickyzees/first-collaborative-project1
Cloning into 'first-collaborative-project1'...
remote: Enumerating objects: 64, done.
remote: Counting objects: 100% (64/64), done.
remote: Compressing objects: 100% (51/51), done.
remote: Total 64 (delta 23), reused 25 (delta 10), pack-reused 0 (from 0)
Receiving objects: 100% (64/64), 24.17 KiB | 1.51 MiB/s, done.
Resolving deltas: 100% (23/23), done.
PS C:\Users\user> cd  "first-collaborative-project1"
PS C:\Users\user\first-collaborative-project1> git branch
* main
PS C:\Users\user\first-collaborative-project1> ls

    Directory: C:\Users\user\first-collaborative-project1

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a---          26-Feb-26 06:09 PM           3284 contact.html
-a---          26-Feb-26 06:09 PM           2356 index.html
-a---          26-Feb-26 06:09 PM            195 README.md
-a---          26-Feb-26 06:09 PM           3269 styles.css
```

3. Industrial Workflow Process

This workflow reflects professional development practices followed in real software organizations:

Original Repository (Admin Controlled)

↓

Permission Denied

↓

Fork Repository

↓

Clone Repository Locally

↓

Move about.html into Project Folder

↓

git add → git commit → git push

↓

Create Pull Request

↓

Admin Review & Merge

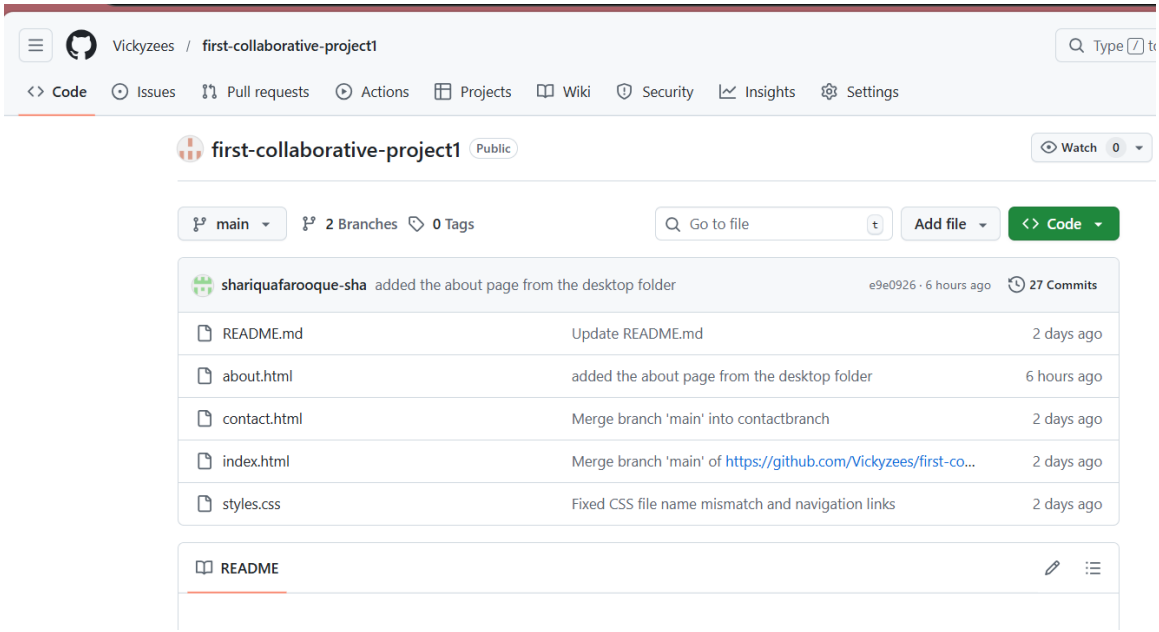
↓

Verify Deployment Link

```
PS C:\Users\user\first-collaborative-project1> mv "C:\Users\user\Desktop\About folder saved here\about.html"
PS C:\Users\user\first-collaborative-project1> ls

    Directory: C:\Users\user\first-collaborative-project1

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a---           24-Feb-26 11:50 PM           2155 about.html
-a---           26-Feb-26 06:09 PM           3284 contact.html
-a---           26-Feb-26 06:09 PM           2356 index.html
-a---           26-Feb-26 06:09 PM            195 README.md
-a---           26-Feb-26 06:09 PM           3269 styles.css

PS C:\Users\user\first-collaborative-project1> git add .
PS C:\Users\user\first-collaborative-project1> git commit -m " added the about page from the desktop folder"
[main e9e0926]  added the about page from the desktop folder
 1 file changed, 84 insertions(+)
 create mode 100644 about.html
PS C:\Users\user\first-collaborative-project1> git push origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 1.04 KiB | 1.04 MiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/Vickyzees/first-collaborative-project1
   f9106ad..e9e0926  main -> main
PS C:\Users\user\first-collaborative-project1>
```

4. Root Cause Analysis

Issue	Root Cause	Resolution
Push denied	No collaborator access	Implemented Fork workflow
PR not visible on site	GitHub Pages linked to old repository	Verified and used correct repository URL
File outside project	`about.html` saved in Desktop folder	Moved file into project directory



5. Implementation Summary

- Forked the original repository.
- Cloned the forked repository to the local system.
- Moved `about.html` from Desktop into the project directory.
- **Executed Commands:**
    1. `git add .`
    2. `git commit -m "added about page"`
    3. `git push origin main`

Created a Pull Request and Verified repository link and confirmed correct deployment.

6. Key Learning Outcomes

- Understanding of enterprise Git collaboration models.
- Practical experience with Fork & Pull Request lifecycles.
- Knowledge of branch protection and access control.
- Deployment verification and configuration validation.
- Real-world debugging and issue resolution.

7. Industrial Relevance

The workflow implemented in this project is widely used in:

- Enterprise software companies
- DevOps CI/CD pipelines
- Agile development teams
- Open-source contribution models

It ensures controlled collaboration, code security, and production stability.

8. Conclusion

This project provided hands-on experience in real-world collaborative software development using Git and GitHub. By resolving permission restrictions and deployment configuration issues, practical DevOps problem-solving skills were developed. The successful implementation of the Fork & Pull Request workflow demonstrates readiness for professional, industry-level development environments.